COMMON TECHNICAL FRAMEWORK

Data Standards

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DMSO Data Standards Program

Data Standards are the third component of the M&S CTF:

- the formal vehicle for promulgation and enforcement
- a template for using standards to create, manage, and deliver data

Data Issue:	Standards Approach:
Recognition →	Common Semantics and Syntax
Realization →	Systems Architecture for Data
Repeatability →	Data Production Sequence Data Engineering Process
Reuse →	Authoritative Data Sources Data Interchange Formats

Data Standards Project Priorities

- **HLA FOM/SOM content standards and data interchange formats, with immediate focus on the IEEE-1278.1 PNP Reference FOM**

- **JSIMS and JWARS related CMMS integration and interoperability**

- **Scenario generation with Order of Battle instance data interchange**

- **Joint Data Engineer Process Demonstration**

Common Syntax and Semantics
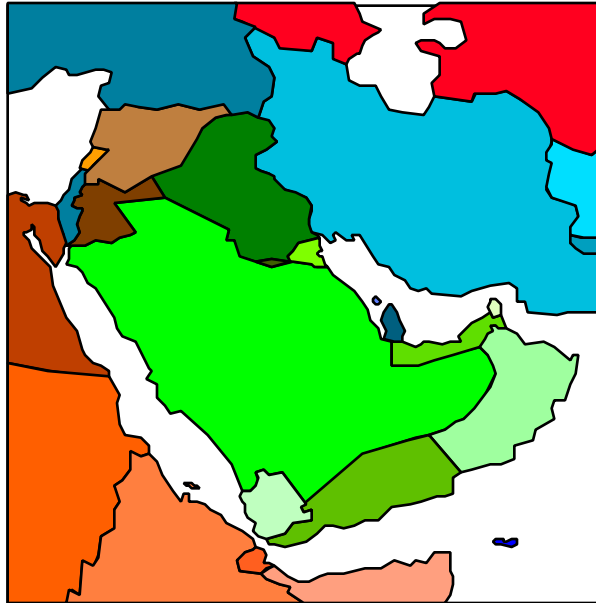
CSS is the vehicle for:

- **recognizing content**
- **repeatable construction**

which <u>enables</u> re-use

Order of Battle CSS:

- **same meaning, different terms**
  - **CFDB country codes**
  - **MIDB alligiance**
- **same term, different meaning**
- **common task organization template**

ENTITY-Based Abstractions

- **ENTITY**   **A distinguishable person, place, thing, or concept about which information is kept [2]. In particular, *ENTITY* includes the notions of person, organization, facility, feature, materiel, and plan defined in [5].**

- **Concrete Examples**
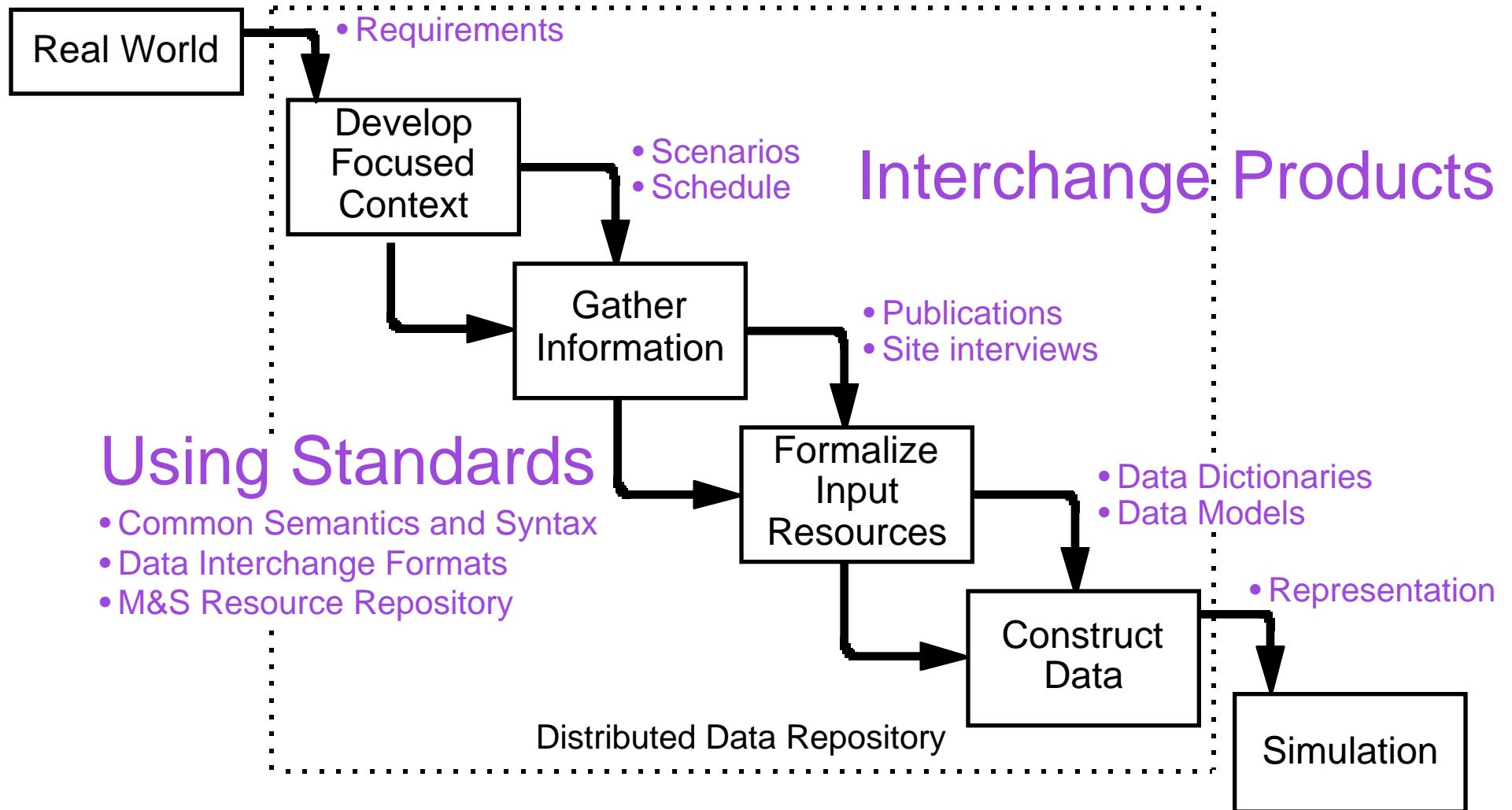 - **Person**   **Wing Commander, Pilot**
  - **Organization**   **JFACC, Flight**
  - **Facility**   **Airbase, Power Plant**
  - **Feature**   **Road, River, Bridge**
  - **Materiel**   **F15, AWACS, Sidewinder**
  - **Plan**   **ATO**

- **Abstraction Examples**
  - **Core C2**   **GCCS entity-relationship diagram**
  - **JWSOL**   **JTF-ATD object classes**

ACTION-Based Abstractions

- ACTION   The alteration or transformation by natural force or human agency which produces a change in state or condition. *ACTION = VERB* [+ *ENTITY*]

- **Concrete Examples**
  - **Physical Verbs**   Move, Sense, Communicate, Engage, Replenish,...
  - **Cognitive Verbs**   Develop, Monitor, Analyze, Supervise,...
  - **Capabilities**   Refuel Aircraft
                          Launch Missile
                          Detect Submarine
                          Generate ATO

- **Abstraction Examples**
  - **UJTL**   Process-oriented operations templates
  - **CMMS Verb Syntax**   Behavior-oriented C2 templates

Data Production Sequence

Real World

• Requirements

Develop Focused Context

• Scenarios
• Schedule

Interchange Products

Gather Information

• Publications
• Site interviews

Using Standards

• Common Semantics and Syntax
• Data Interchange Formats
• M&S Resource Repository

Formalize Input Resources

• Data Dictionaries
• Data Models

Construct Data

• Representation

Distributed Data Repository

Simulation

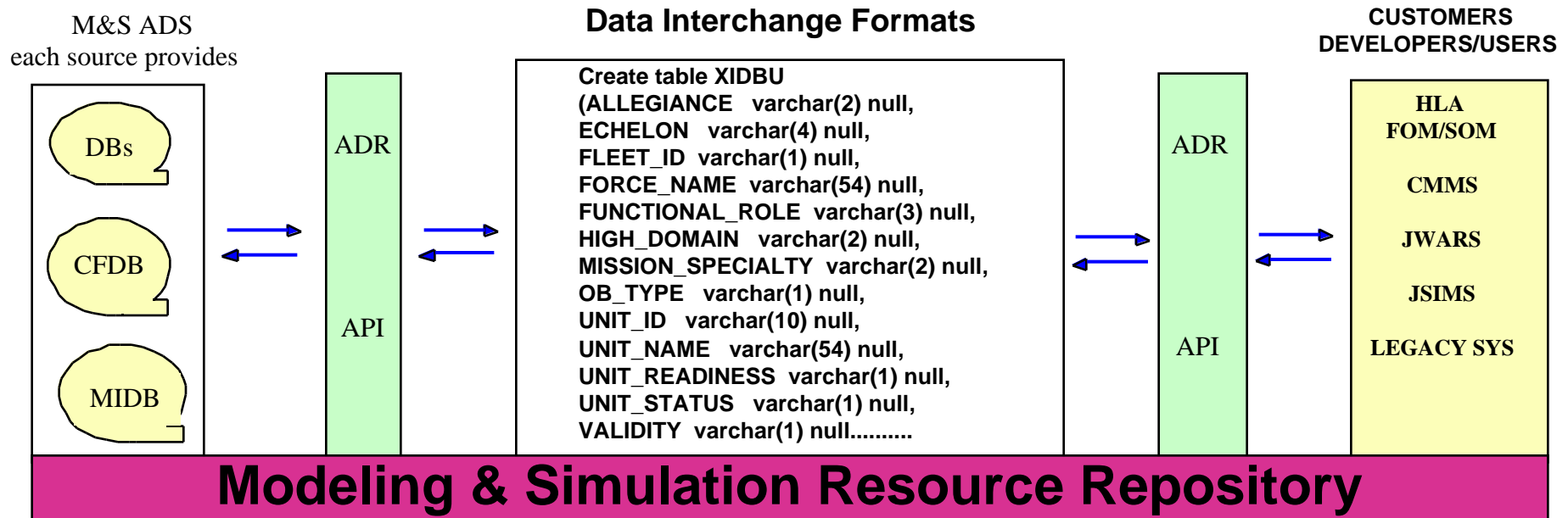# Authoritative Data Sources (ADS)
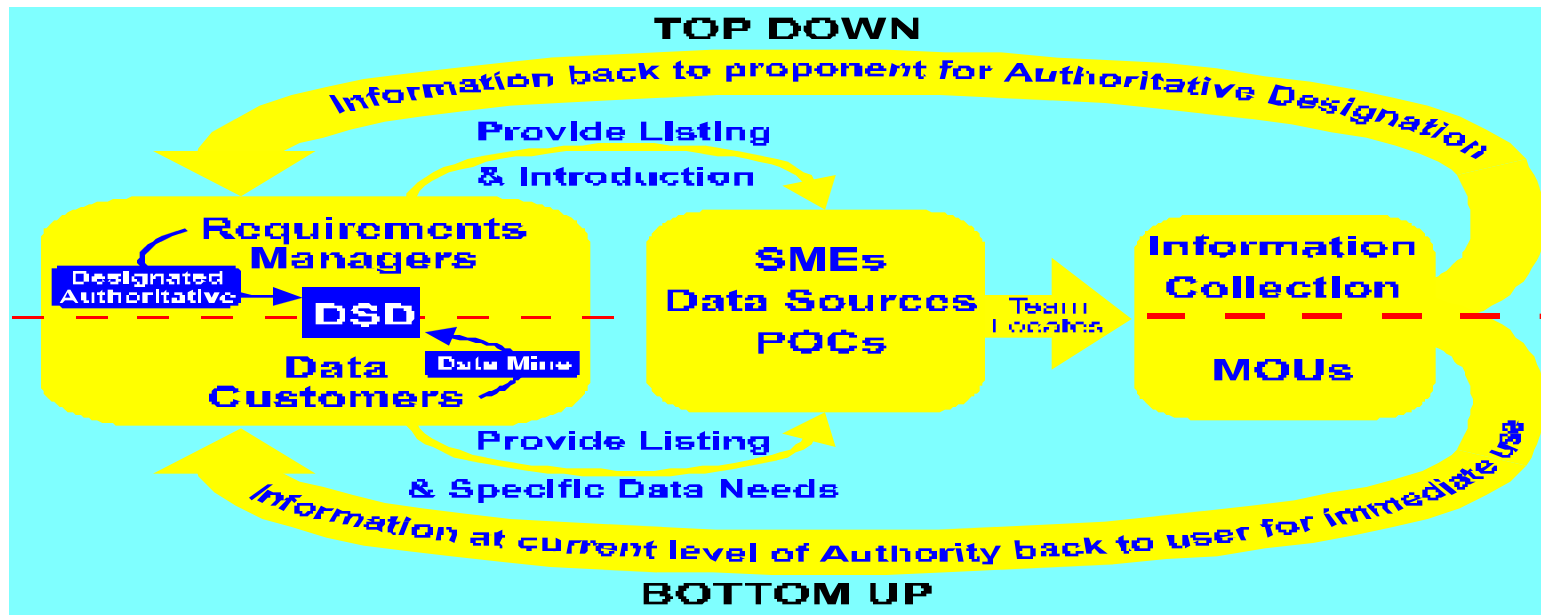
- **ADS consists of the:**
  - **the Producer**
  - **the Data**
  - **the Pedigree**

- **AND designation by an Authority**

These Order of Battle ADS's:

- **JOPES, Service's Personnel and Logistics DBs**
- **CENTCOM CFDB**
- **DIA MIDB**

will be available in the DMSO demo

Data Interchange Formats (DIF)

M&S ADS
each source provides

Data Interchange Formats

DBs

CFDB

MIDB

ADR

API

```
Create table XIDBU
(ALLEGIANCE   varchar(2) null,
ECHELON   varchar(4) null,
FLEET_ID varchar(1) null,
FORCE_NAME  varchar(54) null,
FUNCTIONAL_ROLE  varchar(3) null,
HIGH_DOMAIN   varchar(2) null,
MISSION_SPECIALTY  varchar(2) null,
OB_TYPE   varchar(1) null,
UNIT_ID   varchar(10) null,
UNIT_NAME   varchar(54) null,
UNIT_READINESS  varchar(1) null,
UNIT_STATUS   varchar(1) null,
VALIDITY  varchar(1) null..........
```

ADR

API

**HLA
FOM/SOM**

CMMS

JWARS

JSIMS

LEGACY SYS

Modeling & Simulation Resource Repository

DIF is the physical realization of the logical CSS structure and content:

- logical specification
- physical format
- families of interfaces
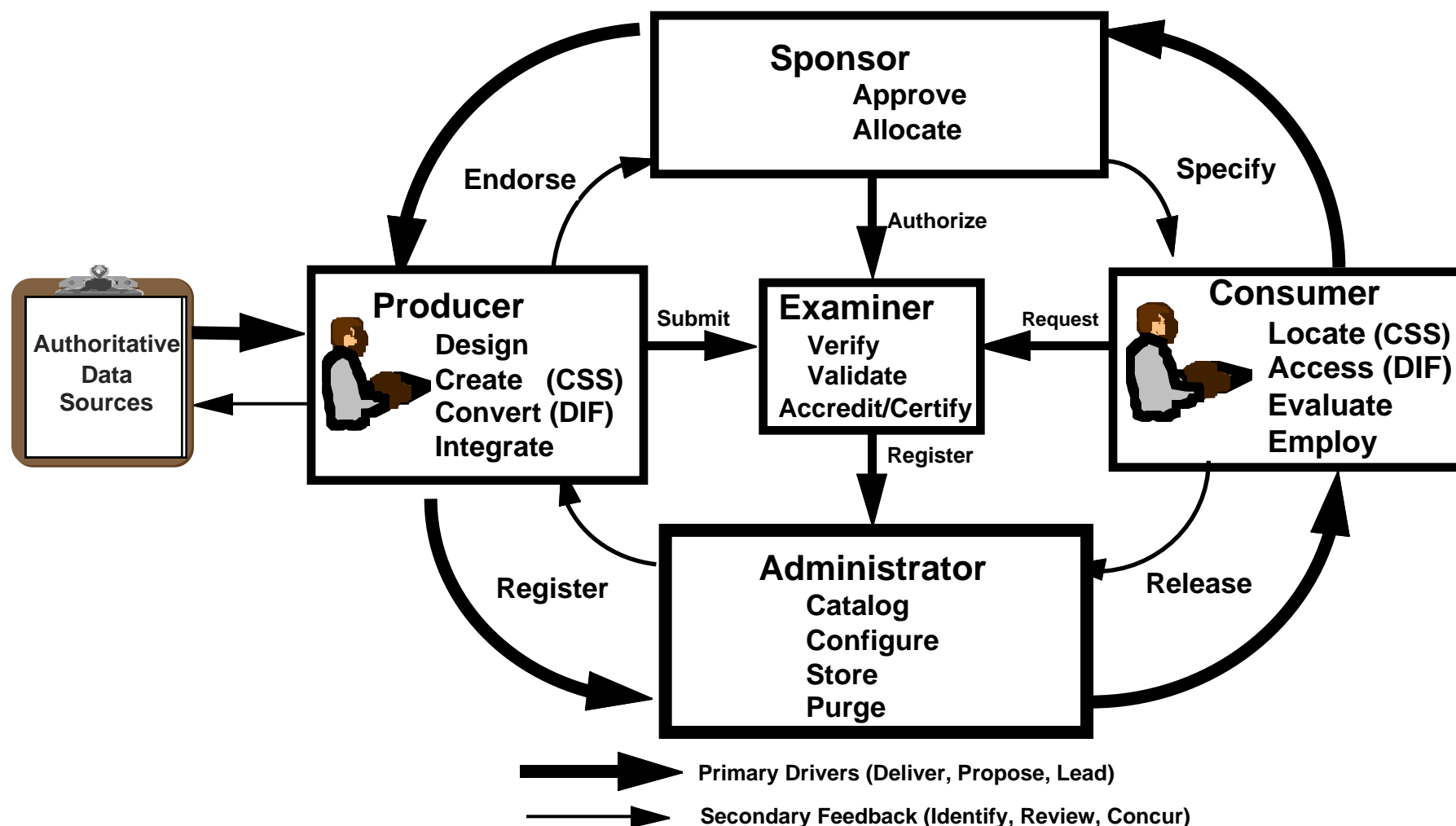
used by programmers to exchange data

Order of Battle examples:

- **US & IRAQ unit OB descriptions**
- **Scenario Generation**
- **OB file formats**

will be available in the DMSO demo

Data Standars

Data Engineering Process, Version 0.1.5

Sponsor
Approve
Allocate

Producer
Design
Create   (CSS)
Convert (DIF)
Integrate

Examiner
Verify
Validate
Accredit/Certify

Consumer
Locate (CSS)
Access (DIF)
Evaluate
Employ

Administrator
Catalog
Configure
Store
Purge

Authoritative
Data
Sources

Endorse

Specify

Authorize

Submit

Request

Register

Register

Release

Primary Drivers (Deliver, Propose, Lead)

Secondary Feedback (Identify, Review, Concur)

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Repeatability ——————▶ Data Produciton Sequence
Data Engineering Process

Reuse ——————▶ Authoritative Data Sources
Data Interchange Formats

Data Standars

J²CMMS Development Strategy

Real World

• Requirements

Develop Focused Context

• Scenarios
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Exchange Products

Gather Information

• Publications
• Site interviews

Using Standards

• Common semantics and syntax
• Data Interchange Formats
• M&S Resource Repository

Organize Data

• Operation Specs
• Use Cases

Construct Conceptual Models

• Conceptual models

Front End Analysis

CMMS Common Repository